Sounak Mandal
19EL10088

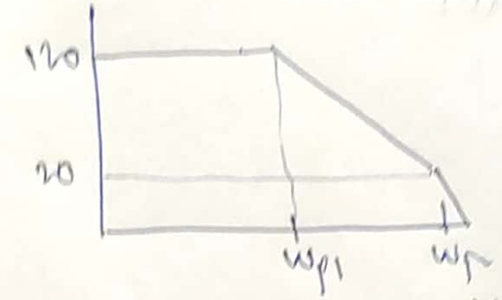
3.b)

For $A\beta = 1$

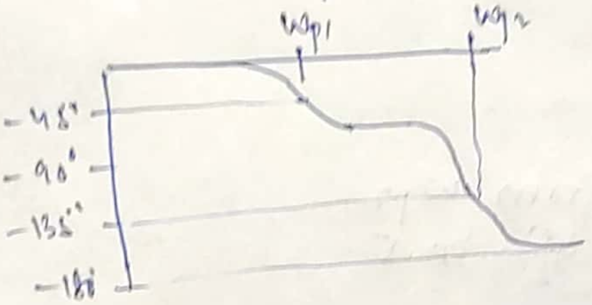
$A\beta = 10^6$

$\omega_{p1}' = \omega_{p1}(1+A\beta) = \cancel{120}\ 1MHz$

$\omega_{p2}' = \omega_{p2}(1+A\beta) = 10^6 \times 100\,kHz = 100\,GHz$



5 decades away pole

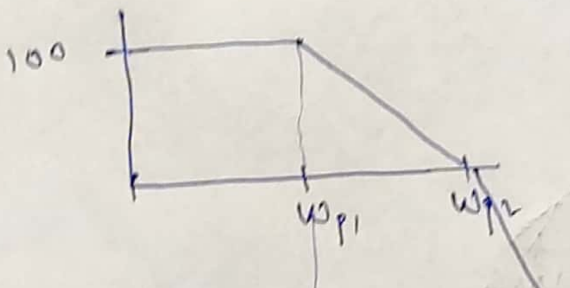


For $\beta = 0.1$

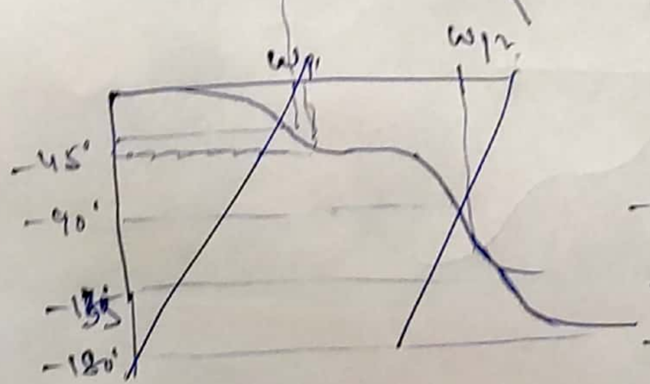
$A\beta = 10^5$ $\quad 20\log_{10}10^5 = 100$

$\omega_{p1}'' = 10^5\,Hz = 0.1\,MHz$

$\omega_{p2}'' = 10^7\,kHz = 10\,GHz$



5 decades away



Sounak Mandal
19EC10088

ii) For $\beta = 1$, $\omega_{ax} = 10^{0.5}\,\omega_{p2}'' = 3.16\,\omega_{p2}'$

Fall by 40 dB/decade
20 dB was left
$\therefore$ ω_{ax} is 0.5 decade away

$\omega_{ax} = 3.16 \times 100$ GHz $= 316$ GHz
$\omega_{px} = \infty$

For $\beta = 0.1$

$\omega_{ax} = \omega_{p2}'' = 10$ GHz
$\omega_{px} = \infty$

iii) For $\beta = 1$

ω_{ax} is $\frac{1}{2}$ decade away from ω_{p2}
$\omega_{px} = 180^\circ - (135^\circ + \frac{45^\circ}{2}) = \frac{45^\circ}{2} = 22.5$

For $\beta = 0.1$

ω_{ax} is ω_{p2}
$\therefore$ $\omega_{px} = -135^\circ + 180^\circ = 45^\circ$

iv) $\beta = 1$